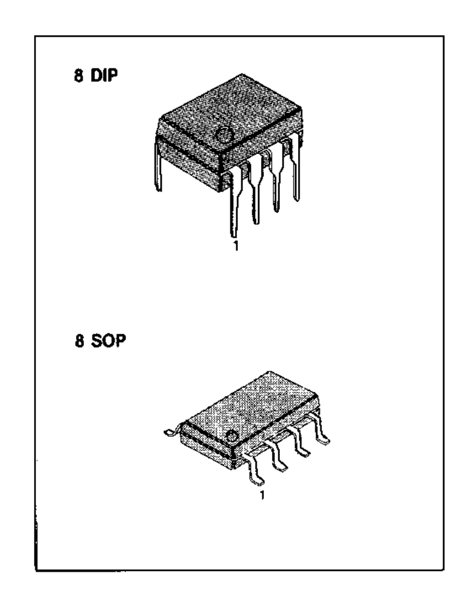
LOW VOLTAGE DC MOTOR SPEED CONTROLLER

USE

- Speed control or general-purpose low-voltage compact DC motor for microcassette tape recorders, radio cassettes and their equivalents.

FEATURES

- **Operating supply voltage range**
  KA2402: V_{CC} = 1.8V ~ 8V
  KA2402D: V_{CC} = 1.8V ~ 4.5V
- **Capable of making the applicable set compact because of a minimum to adjust speed.**
- **Easy to adjust speed.**
- **Built-in stable low reference power meeting the requirements for 2 speeds.**
- **V_{REF} = 0.2V**



ORDERING INFORMATION

Device	Package	Operating Temperature
KA2402	8 DIP	−20°C ~ +80°C
KA2402D	8 SOP	

BLOCK DIAGRAM

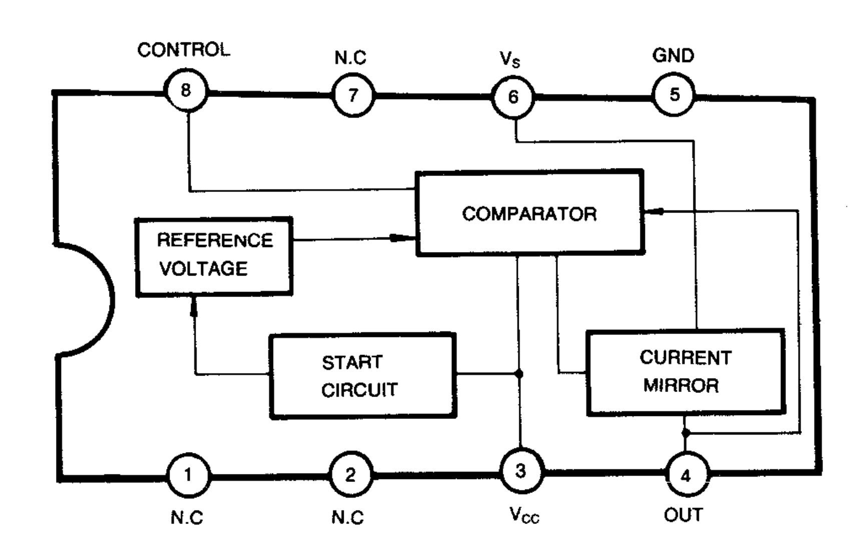


Fig. 1

ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

Characteristic	Symbol	Value	Unit
Maximum Supply Voltage	V_{CC}	10	V
Maximum Motor Current	$I_{M\ (MAX)}$	700	mA
Power Dissipation	P_D	600	mW
Operating Temperature	T_{OPR}	−20 ~ +80	°C
Storage Temperature	T_{STG}	−40 ~ +125	°C

RECOMMENDED OPERATING CONDITIONS (Ta=25°C)

Characteristic	Symbol	Value		Unit
Supply Voltage	V_{CC}	KA2402	1.8 ~ 8	V
		KA2402D	1.8 ~ 4.5	
Recommended Operating Temperature	T_{OPR}	−20 ~ 60		°C

ELECTRICAL CHARACTERISTICS (Ta=25°C)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Reference Voltage	V_{REF}	V_{CC}=3V, I_M=100mA	0.18	0.2	0.22	V
Circuit Current	I_{CC}	V_{CC}=3V, I_M=100mA		2.4	6.0	mA
Current Coefficient	K	V_{CC}=3V, I_M=50mA I_M=100mA	45	50	55	
Saturation Voltage	V_{SAT}	V_{CC}=3V, I_M=100mA		0.13	0.3	V
Voltage Characteristic of Reference Voltage	$\frac{\Delta V_{REF}}{V_{REF}}/\Delta V_{CC}$	I_M=100mA V_{CC}=1.8 ~ 8V (KA2402) 1.8 ~ 4.5V (KA2402D)		0.1		%/V
Voltage Characteristic of Current Coefficient	$\frac{\Delta K}{K}/\Delta V_{CC}$	I_M=50, 150mA V_{CC}=1.8 ~ 8V (KA2402) 1.8 ~ 4.5V (KA2402D)		0.3		%/V
Voltage Characteristic of Reference Voltage	$\frac{\Delta V_{REF}}{V_{REF}}/\Delta I_m$	I_M=3V I_M=20 ~ 200mA		0.005		%/mA
Current Characteristic of Current Coefficient	$\frac{\Delta K}{K}/\Delta I_m$	V_{CC}=3V, I_M=20, 50mA −170, 200mA		−0.07		%/mA
Temperature Characteristic of Reference Voltage	$\frac{\Delta V_{REF}}{V_{REF}}/\Delta T_a$	V_{CC}=3V, I_M=100mA T_a= −20 ~ +80°C		−0.008		%/°C
Temperature Characteristic of Current Coefficient	$\frac{\Delta K}{K}/\Delta T_a$	V_{CC}=3V, I=50m, 150mA T_a= −20 ~ +80°C		0.02		%/°C

TEST CIRCUIT

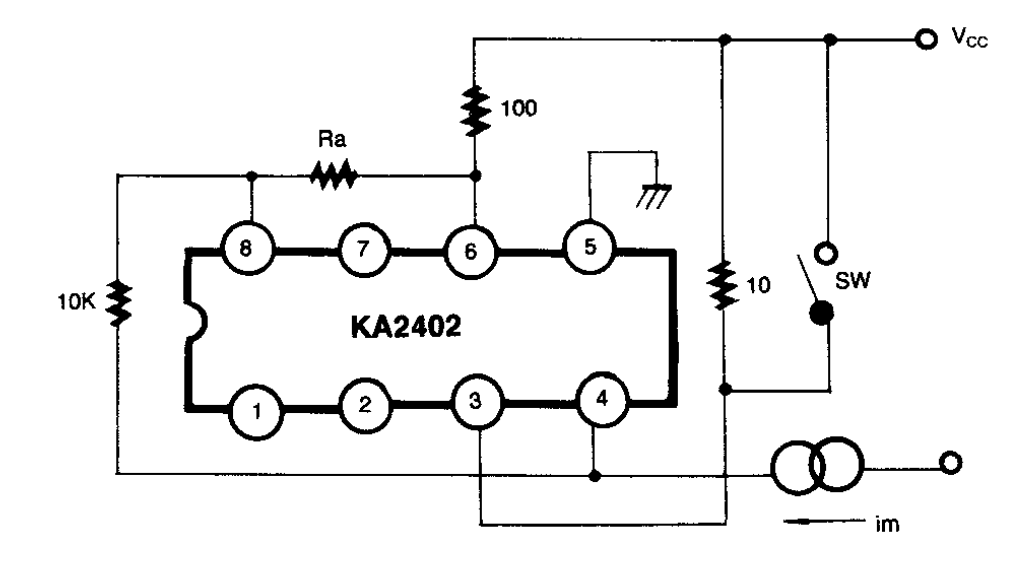


Fig. 2

APPLICATION CIRCUIT

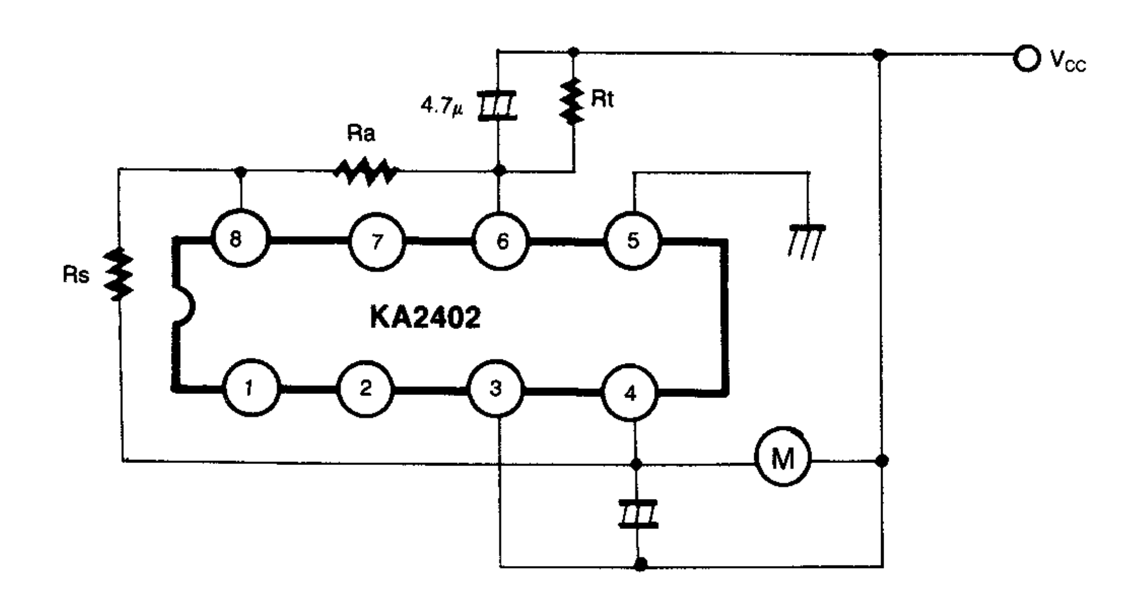


Fig. 3